U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

01-OSR-0498

Mr. Ron F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 – PHASE B, LIMITED CONSTRUCTION READINESS INSPECTION REPORT, IR-01-008

References:

1. BNI letter from R. F. Naventi to W. J. Taylor, ORP, "Declaration of Readiness for Phase B Limited Construction Authorization Request Activities," CCN 024693, dated November 8, 2001.

2. ORP letter from H. L. Boston to R. F. Naventi, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Limited Construction Activities," 01-OSR-0381, dated October 5, 2001.

3. BNI letter from R. F. Naventi to M. K. Barrett, ORP, "Transmitted for Information: Limited Construction Authorization Request, Revision 1, Incorporation of Changes per Authorization Basis Change Notice 24590-WTP-ABCN-ESH-01-019, Revision 0, *Identify Phase A/B Activities in LCAR*," CCN 023327, dated September 25, 2001.

4. ORP letter from H. L. Boston to R. F. Naventi, BNI, "Authorization to Proceed with Phase B Limited Construction Activities," 01-OSR-0466, dated November 16, 2001.

This letter transmits Inspection Report IR-01-008 in which the Office of Safety Regulation (OSR) assessed Bechtel National, Inc.'s (BNI's) readiness to perform Phase B, Limited Construction activities requested in Reference 1. The inspection was a follow-on to the Phase A limited construction readiness inspection, to assess BNI's capability to perform important-to-safety (ITS) work specified in the Limited Construction Authorization Request (Reference 2) and required by the Office of River Protection's Notice to Proceed with Limited Construction Activities (Reference 3).

The inspectors identified no Findings, however, as discussed below, a recurring issue that requires BNI senior management attention was identified. The enclosed inspection report documents the details of this inspection. Based on the results of this inspection, the OSR determined BNI was ready to perform Phase B LCAR activities described in Reference 3. Reference 4 authorized BNI to proceed with Phase B limited construction activities.

The inspectors found that BNI's Phase B LCAR readiness assessment, which was provided to ORP in a November 8, 2001, letter (Reference 1), provided some information that was either incomplete or misleading, and, therefore, did not accurately represent BNI's readiness to proceed. When the OSR pursued those readiness-related deficiencies, BNI demonstrated a complete knowledge of the deficiencies and the ongoing actions to address them. The readiness assessment, however, did not reflect this information.

This issue, deficient DOE Contractor readiness assessments, has the attention of the Department and its external oversight organization, the Defense Nuclear Facilities Safety Board (DNFSB). On December 11, 2001, at the DOE Executive Safety Conference, the Chairman of the DNFSB stated in his remarks, "We continue to observe instances when contractor line managers claim readiness to proceed….and DOE…. reviews reflect inadequate training, faulty procedures and other safety problems. …DOE personnel should not do the work for which the contractor is being paid."

It is imperative that BNI take sufficient actions to ensure its readiness assessments are thorough and complete, and accurately reflect its readiness to proceed. As this issue is recurring, the ORP requests that BNI formally provide the actions it will implement to prevent recurrence of this issue.

If you have any comments concerning the inspection report, you or your staff may contact me or Pat Carier of my staff, (509) 376-3574. Nothing in this letter should be construed as changing the Contract, DE-AC27-01RV14136. If, in my capacity as the Safety Regulation Official, I provide any direction that your company believes exceeds my authority or constitutes a change to the Contract, you will immediately notify the Contracting Officer and request clarification prior to complying with the direction.

Sincerely,

Robert C. Barr
Safety Regulation Official
Office of Safety Regulation

OSR:JWM

Enclosure

Enclosure
01-OSR-0498
IR-01-008

U.S. DEPARTMENT OF ENERGY
Office of River Protection
Office of Safety Regulation

INSPECTION: PHASE B LIMITED CONSTRUCTION AUTHORIZATION READINESS INSPECTION

REPORT NO: IR-01-008

FACILITY: Bechtel National, Inc.

LOCATION: 3000 George Washington Way
Richland, Washington 99352

DATES: November 13-15, 2001

INSPECTORS: J. McCormick-Barger (Lead), Senior Regulatory Technical Advisor
P. Carier, Verification and Confirmation Official
D. Kirsch, Consultant
M. Black, Consultant

APPROVED BY: P. Carier, Verification and Confirmation Official
Office of Safety Regulation

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EXECUTIVE SUMMARY
Phase B Limited Construction Authorization Readiness Inspection
Inspection Report Number IR-01-008

INTRODUCTION

This inspection of Bechtel National, Inc. (the Contractor) Phase B Limited Construction Program covered the following specific areas:

- Adequacy of Contractor's Assessment of Readiness (Section 1.2)
- Adequacy of the Design (Section 1.3)
- Measuring and Test Equipment Calibration (Section 1.4)
- Backfill and Compaction Activities (Section 1.5)
- Materials Testing Activities (Section 1.6)
- Fire Protection System (Section 1.7)

SIGNIFICANT OBSERVATIONS AND CONCLUSIONS

- The Contractor performed an assessment of readiness to conduct Phase B LCAR activities. Some summary information contained in the assessment was misleading due to a less than adequate review or omission of Contractor findings, observations, and planned actions. The inspection team identified some deficiencies that the Contractor staff was aware of and in the process of addressing that had not been documented, or incorrectly documented, in the assessment report. (Section 1.2)

- The initial drawings used to define the Phase B Limited Construction Authorization Request (LCAR) excavation work were issued for construction but lacked elevation information and excavation drainage requirements necessary to perform the worked authorized. Subsequently, revised drawings were provided that contained the appropriate information. The firewater supply drawings had been issued for construction and, based on the review performed by the Fire Protection Authority Having Jurisdiction (AJH), the system layout conditionally met the requirements of NFPA 24. (Section 1.3)

- The Contractor had established an adequate limited-scope calibration laboratory subcontract. This subcontract was capable of providing necessary calibration services to support limited construction services. Specific equipment suppliers supplemented special calibration needs, such as survey instrumentation calibration. (Section 1.4)

- The subcontractor’s program and procedures for performing important-to-safety (ITS) backfill and compaction activities were adequate and met Quality Assurance (QA) requirements. The Office of Safety Regulation (OSR) will verify implementation of these programs and procedures in future geotechnical inspections. (Section 1.5)

- BNI's independent assessment of the soil testing subcontractor's QA Manual did not include verification of conformance to American Society for Testing and Materials (ASTM) Standard D 3740, "Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction," 2001 Edition, requirements. When the OSR inspectors notified the QA Manager of this observation, he committed to correct this oversight by performing a review of the subcontractor's QA Manual against ASTM D 3740.

  BNI's future audit plans of the subcontractor's soils and backfill testing activities were adequate in that the plans included compliance audits. BNI also was taking adequate measures to assure that the subcontractor's testing procedures would implement the applicable ASTM testing requirements. Provisions for the management of materials testing records were adequate.

  The inspectors identified two follow-up items: assess the QA Manager's review the subcontractor's QA Manual against ASTM D 3740 requirements and review future subcontractor procedures used to implement testing standards identified in the Contractor's soil testing specification. (Section 1.6)

- The inspectors concluded that the Contractor had established adequate programs and procedures to assure that firewater service mains and hydrants would be installed, inspected, tested, and maintained in accordance with design and National Fire Protection Association (NFPA) requirements. (Section 1.7)

PHASE B LIMITED CONSTRUCTION AUTHORIZATION READINESS INSPECTION

Table of Contents

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PHASE B LIMITED CONSTRUCTION AUTHORIZATION READINESS INSPECTION

1.0 REPORT DETAILS

1.1 Introduction

In accordance with the River Protection Project Waste Treatment Plant (RPP-WTP) Contract (DE-AC27-01RV14136) between the U.S. Department of Energy (DOE) and Bechtel National, Inc. (the Contractor) dated December 11, 2000, the Contractor submitted a LCAR, letter CCN 020503, dated June 5, 2001, for DOE review and approval. In letter CCN 023327, dated September 25, 2001, the Contractor modified the LCAR to identify Phase A and B activities associated with the LCAR. The DOE Office of River Protection (ORP), Office of Safety Regulation (OSR) evaluated the LCAR in Safety Evaluation Report (SER) ORP/OSR-2001-11, *Safety Evaluation Report of Contractor's limited Construction Authorization*, and completed a Phase A LCAR readiness inspection on September 26, 2001 (Inspection Report No. IR-01-004 issued on October 23, 2001 (01-OSR-0391)). Following completion of the inspection, the ORP issued a Limited Construction Authorization Agreement (LCAA) to the Contractor on October 5, 2001. This LCAA authorized start of Phase A LCAR activities and required the Contractor to: (1) complete implementation of the programs and procedures necessary to ensure LCAR, Table 1-2, "Phase B" activities are accomplished in accordance with the authorization basis, and (2) inform the OSR that it is ready to proceed with Phase B activities. Prior to start of Phase B work, the LCAA also stated ORP would perform sufficient inspections to verify the Contractor is ready to commence Phase B activities and provide concurrence in writing with the Contractor's determination of readiness. This inspection report documents the results of the OSR's Phase B LCAR readiness assessment.

The inspectors reviewed the Contractor's Phase B limited construction implementing procedures, programs, and activities to determine if they complied with the commitments in the LCAR, Integrated Safety Management Plan (ISMP), Quality Assurance Manual (QAM), and Safety Requirements Document (SRD). In addition, the inspectors assessed the implementation of the Contractor's limited construction programs to verify processes were in place and being utilized to support future limited construction activities in a controlled manner. The inspectors performed this readiness review the week of November 13-15, 2001. This review was a continuation of the Phase A LCAR readiness inspection discussed above. Inspection elements completed during the Phase A inspection and documented in that report were not revisited. To get a complete picture of the Contractor's readiness to perform LCAR activities, a review of this and the previous inspection report would be necessary. Details and conclusion regarding this inspection are described in the sections below.

1.2 Adequacy of the Contractor's Assessment of Readiness (Inspection Technical Procedure (ITP) I-135)

1.2.1 Inspection Scope

The inspectors assessed the adequacy of the Contractor's assessment of readiness to perform Phase B LCAR activities. The inspectors reviewed the Contractor's self-assessment report and interviewed Contractor management and staff. Verification of selected information contained in the report was conducted during the inspection and documented below and in other sections of this report.

1.2.2 Observations and Assessments

On November 8, 2001, the Contractor notified the ORP of its declaration of readiness to proceed with Phase B LCAR activities (letter CCN: 024693). Attached to the letter were the Contractor's lines of inquiry documenting the Contractor's assessment of readiness. Their assessment included a review of a broad range of areas associated with planned Phase B LCAR activities and closely followed the inspection steps in applicable OSR inspection procedures. The lines of inquiry provided a means for the Contractor to ensure that necessary activities were completed before declaring readiness. However, summary information contained in the assessment was, in some cases, misleading or the result of a less then adequate review of the areas identified.

For example, the Contractor stated in line-of-inquiry Phase B-13 that construction drawing 24590-BOF-2C-C12T-00002, Rev. 0, dated September 5, 2001, was issued for construction. Although the drawing had been issued for construction, it was not complete or usable to conduct excavation activities because elevation information was missing (See Section 1.5 for related discussions). When the inspectors discussed this with engineering, the cognizant engineer stated that he was aware of the missing information and had just completed analyzing recently obtained survey information and was in the process of revising the drawing to include the ground level elevation for each structure.

The Contractor indicated in line-of-inquiry Phase B-6 that the soil and backfill material testing subcontractor work procedures were adequate to commence work. However, the inspectors noted significant deficiencies in the procedures. When brought to the attention of the Contractor's cognizant engineer, the inspectors were informed the engineer had approved the procedures with comments that had to be addressed. The inspectors reviewed a list of the comments provided to the subcontractor and found they included the same issues the inspectors' identified and more (see Section 1.6.2 for related discussions).

Finally, although the letter notifying ORP that the Contractor was ready to proceed with Phase B activities stated that programs and procedures were in place to support Phase B activities, it did not discuss the deficiencies described above nor indicate that the soils and backfill material testing and excavation and backfill subcontractors were only conditionally approved to perform ITS work pending performance of site audits once the subcontractors were fully mobilized on site.

As discussed above, the inspectors found the Contractor was addressing these issues and the QA department's decision to conditionally approve subcontractors with limited NQA-1 experience was conservative.

1.2.3 Conclusions

The Contractor performed an assessment of readiness to conduct Phase B LCAR activities. However, summary information contained in the assessment was, in some cases, misleading or the result of a less then adequate review of the areas identified. The inspection team subsequently identified some deficiencies that Contractor staff was aware of, and in the process of addressing, which had not been documented in the assessment.

1.3 Adequacy of the Contractor's Design (ITP I-135, I-104)

1.3.1 Inspection Scope

The inspectors reviewed building layout and soil excavation drawings to determine if they appropriately locate the working points for the pretreatment and laboratory buildings and to determine if they, and the excavation and backfill drawings for the Low Activity Waste (LAW) and High Level Waste (HLW) buildings, had been issued for construction. The inspectors also reviewed drawings for the firewater supply system to determine if these drawings had been issued for construction and conformed with the requirements of NFPA 24, "Standards for Installation of Private Fire Service Mains and their Appurtenances," 1995 Edition.

1.3.2 Observations and Assessments

The inspectors reviewed drawing 24590-BOF-C2-C12T-00002, "RPP-WTP Site General Arrangement Plan," Rev. 0, dated September 5, 2001, and Sketch 24590-WTP-FSK-CON-01-004, "Field Sketch HLW and LAW Excavation and Mudmat," Rev 0, dated September 22, 2001. The general arrangement plan listed elevations as TBD (to be determined). The field sketch showed negative measurements (Example, (-) 21'-0") without benefit of an elevation benchmark or reference. Therefore, elevation control was lacking. Without elevation benchmarks, the excavation subcontractor would not be able to perform the Phase B limited construction excavation activities. The inspectors discussed this concern with Contractor engineering representatives and were informed that they were aware of this missing information and in the process of reviewing survey data obtain during the survey teams Phase A limited construction activities (establishing survey monuments). This information was to be used as the basis for establishing the first floor elevations for each of the Phase B LCAR building sites to be excavated. This missing information was previously discussed in Section 1.2. The inspectors found the Contractor's explanation for obtaining the missing information acceptable.

Field Sketch 24590-WTP-FSK-CON-01-004 also was missing information regarding drainage requirements to ensure rain and snow runoff would not adversely effect the excavation sites. Once brought to the Construction Manager's attention, he committed to have this information

added to the field sketch. The Contractor subsequently provided revision 1 to each of the two drawings discussed above, dated December 4, 2001, and November 15, 2001, respectively, which provided the needed elevation and drainage information.

The inspectors reviewed drawings 24590-BOF-C2-C12T-00013 through 24590-BOF-C2-C12T-00032, Rev. 0, "Firewater, Potable Water, Plant Service Air Yard Utility Composite Plan," and 24590-BOF-C2-FPW-00002, Rev. 0, "Fire Water Yard Piping Sections and Details," and determined that these drawings had been issued for construction. The inspectors also confirmed that these drawings were the same drawings that were reviewed and conditionally approved by the OSR in a letter dated November 21, 2001 (Correspondence No. 01-OSR-0439). NFPA 24, Section 1-4.1, requires the layout plan to be approved by the Fire Protection Authority Having Jurisdiction (AHJ) in every case where a new private service main is contemplated. For the RPP-WTP the OSR is the AJH. The above letter provided conditional approval of the firewater layout plan depicted in the above drawings.

1.3.3 Conclusions

Initially, some of the drawings used to define the Phase B LCAR excavation work were issued for construction but lacked elevation information and excavation drainage requirements necessary to perform the worked authorized. These drawings were subsequently provided that contained the appropriate information. The firewater supply drawings had been issued for construction and, based on the review performed by the AJH, the system layout conditionally met the requirements of NFPA 24.

1.4 Measuring and Test Equipment Calibration (ITP I-135, I-106, I-131, I-132, I-133)

1.4.1 Inspection Scope

The inspectors reviewed the Contractor's and any subcontractor's programs for controlling Measuring and Test Equipment (M&TE) calibration. This inspection was intended to be a Phase A LCAR readiness follow-on review to assess any additional programs put in place to supplement the activities underwent to calibrate survey instruments, documented in inspection report IR-01-004. The inspectors reviewed the Contractor's activities to procure calibration services and implement other calibration activities to support Phase B LCAR work.

1.4.2 Observations and Assessments

The review of the adequacy of the Contractor's procedures for controlling M&TE calibration is documented in IR-01-004. During the Phase A LCAR readiness inspection, the Contractor had identified several procurement requisitions that contained M&TE that would require calibration. Once the M&TE arrived, hold tags were being applied for eventual calibration at a QA qualified calibration laboratory. The inspectors had been informed that the Contractor planned to procure a full-scope calibration subcontractor capable of calibrating most of the M&TE needed for the life of the construction project.

During this inspection, the Contractor informed the inspectors that ITS M&TE Phase B LCAR activities were limited to: (1) survey instrumentation calibration discussed in IR-01-004, Section 1.7.2, and (2) calibration of several pressure gages needed to perform pressure testing of piping and other small tools that might be required during initial construction. To address these calibration needs, the Contractor issue a limited-scope subcontract with a local company capable of performing calibrations. This Contract was put in place as an interim measure until a full-scope subcontractor could be identified and procured. The inspectors reviewed the limited scope subcontractor Quality Control Survey Report No. 24590-WTP-AR-QA-01-017, Rev. 0, dated October 2, 2001. The survey report documented that the subcontractor had the program and procedures in place to support the limited scope calibration defined by the subcontract. The Contractor had verified that subcontract services included the use of calibration standards traceable to national standards and procedure to adequately address M&TE found to be out-of-calibration. The Subcontractor was placed on the Approved Supplier List (ASL) as conditionally approved pending verification of corrective actions regarding an issue identified during the site survey. The inspectors verified the ASL listed the subcontractor's calibration capabilities, which defined its limited-scope restrictions. The inspectors determined the calibration provisions put in place to support Phase B LCAR activities were adequate.

Although the Contractor was planning to procure a full-service calibration laboratory, this procurement activity was not yet completed and was not reviewed.

1.4.3 Conclusions

The Contractor had established a limited-scope calibration laboratory subcontractor, capable of providing necessary calibration services to support limited construction services, supplemented by special calibration needs, such as survey instrumentation calibration, provided by specific equipment suppliers.

1.5 Backfill and Compaction Activities (ITP I-135, I-112, I-131, I-132, I-133)

1.5.1 Inspection Scope

The inspectors reviewed subcontractor's programs and procedures for performing ITS backfill and compaction activities. This review included reviewing the Contractor's and/or subcontractor's (1) Quality Assurance (QA) and Quality Control (QC) oversight programs covering backfill and soil compaction activities, (2) procurement of related consumable materials, (3) implementing procedures, (4) control of related records, and (5) the training and qualification of staff involved with backfill and compaction activities.

1.5.2 Observations and Assessments

The subcontractor hired to perform the excavation and backfill work was George A. Grant Inc. The inspectors reviewed the subcontractor's Quality Control Procedures to determine if these

procedures met the requisite Quality Assurance requirements of NQA-1. The following procedures were reviewed:

- QCP-01, "Organization," Rev. 0, effective date March 26, 2001
- QCP-04, "Procurement and Document Control," Rev 0, effective date March 26, 2001
- QCP-05, "Instructions, Procedures and Drawings," Rev. 1, effective date May 14, 2001
- QCP-06, "Document Control," Rev. 2, effective date September 21, 2001
- QCP-07, "Control of Purchased Items and Services," Rev. 1, effective date September 21, 2001
- QCP-10, "Inspection," Rev. 0, effective date March 26, 2001
- QCP-12, "Control of Measuring & Test Equipment," Rev. 1, effective date September 21, 2001
- QCP-14, "Inspection, Test & Operating Status," Rev. 0, effective date March 26, 2001
- QCP-15, "Control of Nonconforming Items," Rev. 0, effective date March 26, 2001
- QCP-16, "Corrective Action," Rev. 0, effective date March 26, 2001
- QCP-17, "Quality Assurance Record," Rev. 1, effective date September 21, 2001
- QCP-18, "Audits," Rev 0, effective date March 26, 2001.

The inspectors found that the above procedures met the essential elements of NQA-1. However, the inspectors were unable to verify the implementation of these procedures since this subcontractor had not performed ITS activities. Implementation of these procedures will be reviewed in future OSR geotechnical inspections.

The inspectors reviewed the Contractor's audit of the above subcontractor. Audit 24590-WTP-AR-QA-01-022, Rev. 0, dated October 10, 2001, evaluated the subcontractor's Quality Assurance Program Basic, dated March 26, 2001, and the associated implementing procedures listed above. The audit was thorough and resulted in one unsatisfactory area. The unsatisfactory area resulted from the Grant lead auditor not having taken a written test as required by NQA-1. An audit deficiency was identified by the Contractor and was being tracked by Surveillance Corrective Action Report (SCAR)-001. The inspectors found no deficiencies in this area.

The inspectors reviewed the subcontractor's implementing procedure for excavation and backfill. Construction Procedure (CP) 01, "Excavation and Backfill Work Control Guidelines," dated November 6, 2001, described responsibilities, training requirements, work control guidelines, reporting non-conforming conditions, and record retention. The procedure also referenced the

appropriate RPP-WTP drawings and specifications. Implementation of this procedure could not be verified since ITS activities had not been performed. Implementation of this procedure will also be verified in future OSR geotechnical inspections.

Control of Records could not be verified since quality records had not been generated. The procedure that will be used by the subcontractor for controlling quality related records was reviewed as discussed above. The inspectors found no deficiencies in this area.

Training and qualification of staff involved with backfill and compaction activities could not be verified since personnel who will be performing these activities had not been designated or, in some cases, hired by the Contractor and subcontractor.

1.5.3 Conclusions

The inspectors found that the subcontractor's program and procedures for performing ITS backfill and compaction activities were adequate and met Quality Assurance requirements. Implementation of these programs and procedures will be verified in future OSR geotechnical inspections.

1.6 Materials Testing Activities (ITP I-135, I-112, I-130, I-131, I-132, I-133)

1.6.1 Inspection Scope

The inspectors reviewed programs and procedures for performing ITS materials testing activities. This included reviewing the Contractor's and/or subcontractor's (1) QA and QC oversight programs covering materials testing, (2) implementing procedures, and (3) control of related records.

1.6.2 Observations and Assessments

The subcontractor (GN Northern, Inc.) had not yet mobilized on site to conduct materials testing work. Accordingly, the inspectors did not examine the subcontractor's personnel qualifications, laboratory and field inspection procedure implementation, or implementation of record management activities.

Before this inspection, BNI had reviewed and accepted the subcontractor's QA Manual and had conditionally placed the subcontractor on the ASL, on September 17, 2001, subject to a Contractor's implementation audit following mobilization. As part of this inspection, the OSR inspectors also reviewed the materials testing subcontractor's quality assurance manual (*Quality Assurance Manual*, no document number, Issue No. 2, Rev. 3, dated October 5, 2001) and compared the document to the requirements of ASTM D 3740, "Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction," 2001 Edition. The inspectors inquired whether BNI's review of the QA Manual had considered ASTM Standard D 3740. BNI stated it had reviewed

the QA Manual against NQA-1 requirements, but had not considered the ASTM requirements. During this inspection, the OSR inspectors found that the subcontractor's QA Manual had not incorporated selected requirements of the ASTM standard, as required by SRD Safety Criterion (SC) 4.2-1. For example, the subcontractor's QA Manual, Sub-section 2.4.4, "Quality Control Technicians and Inspectors," allowed a "Technician Level II" with two years experience to work independently and to supervise other technicians. Furthermore, the QA Program did not differentiate between field experience and laboratory experience. This was contrary to ASTM D 3740, which states the following:

- ASTM D 3740-01, Sub-section 7.2, "Supervising Laboratory Technician," requires that the "supervising laboratory technician shall have at least 5 years experience performing tests on soil and rock"

- ASTM D 3740-01, Sub-section 7.3, "Supervising Field Technician," requires that the "supervising laboratory technician shall have at least 5 years experience in inspecting the kind of work involved in the soil and rock construction project"

- ASTM D 3740-01, Sub-section 7.4, "Inspecting or Testing Technician," requires that the "inspecting or testing technician shall work under the direct supervision of one meeting the requirements of 7.2 or 7.3, but shall not be permitted to independently evaluate test results."

  Note: ASTM D 3740 contains no other technician classifications other than those stated under Subsections 7.2, 7.3, and 7.4.

In addition, Sub-section 9.1.1 requires that "The quality manual shall contain the legal name and address of the agency and that of the main office or company, if different, and any other information needed to identify the organization." The subcontractor's main office is in Yakima, WA, information that was not included in its QA Manual. Also, Sub-section 9.1.2 required that "The quality manual shall contain the ownership and management structure of the company. Names, affiliations and positions of principal officers and directors shall be listed." The QA Manual also was missing this information.

Once brought to BNI's attention, the BNI QA Manager committed to review the QA plan against the ASTM standard and ensure identified deficiencies would be addressed prior to the subcontractor performing ITS work. The inspectors found this commitment acceptable. OSR follow-up on this action will be tracked as inspection follow-up item IR-01-008-01-IFI.

The inspectors reviewed the subcontractor's Laboratory and Field Inspection Procedures, Issue No. 2, Rev. 0, dated June 22, 2001. The Contractor had accepted the procedures specific to soil and backfill inspection. This was reflected on the BNI's Line-of-Inquiry B-6, approved and dated November 7, 2001, without noting that the acceptance was subject to a verification audit by BNI. The inspectors observed on November 13, 2001, that the accepted procedures would not provide sufficient assurance that the requirements of the applicable ASTM standards governing the testing would be implemented during test conduct and questioned the Contractor regarding the basis for acceptance. In response, BNI's field engineers informed the inspectors they also had determined that the subcontractor's field inspection procedures were not adequate

to assure that the testing would be accomplished in accordance with ASTM requirements and, on November 12, 2001, instructed the subcontractor to revise and resubmit the procedures for review, with the notation that work may proceed subject to resolution of comments. Accordingly, the assertion of the Contractor's LCAR Readiness Assessment, Line-of-Inquiry Phase B-6, regarding the acceptance of the subcontractor's laboratory and field testing procedures, specific to soil and backfill inspection, did not communicate an accurate status of the state of subcontractor readiness. This issue was previously discussed in Section 1.2.2.

Some standards specified in BNI's soil testing specification were not included in the subcontractor's procedures provided to the inspectors. BNI notified the inspectors that the subcontractor would have to prepare and present to the Contractor, for approval, additional procedures to address the other standards when, and if, they were needed to support testing activities. The Contractor stated that the subcontractor's certification by the American Association of State Highway and Transportation Officials (AASHTO) to ASTM Standard D 3740 and QA approval and site survey of the subcontractor's NQA-1 QA program provided assurance that the subcontractor has the program in place to establish the procedures and qualifications for conducting the standards listed in the specification. Because the inspectors were unable to assess all the procedures for conducting the standards listed in the testing specification, the OSR will review these procedures during subsequent geotechnical inspections of field activities. This issue will be tracked as inspection follow-up item IR-01-008-02-IFI.

The inspectors found that the requirements of the subcontractor's QA Manual and subcontract specifications regarding records management were acceptable and met QA requirements.

1.6.3 Conclusions

The BNI assessment of the subcontractor's QA Manual did not include verifying conformance to ASTM Standard D 3740 requirements. When notified of this OSR observation, the QA Manager agreed to perform a review of the subcontractor's QA Manual against ASTM D 3740. The Contractor had planned adequate measures, in the form of implementation audits, to assure that the subcontractor would accomplish the required soils and backfill testing in accordance with specified requirements and was taking adequate measures to assure that the subcontractor's testing procedures would implement the applicable ASTM testing requirements. Provisions for the management of materials testing records were adequate. Two inspection follow-up items were identified to track the audits of the subcontractor's QA Manual against ASTM D 3740 requirements, and to track OSR review of future subcontractor procedures used to implement testing standards identified in the BNI's soil testing specification.

1.7 Fire Protection System (ITP I-135, I-137)

1.7.1 Inspection Scope

The inspectors reviewed Contractor's programs and procedures for performing firewater system installation activities. This included reviewing the Contractor's (1) QA and QC oversight programs covering firewater system installation activities, (2) procurement of related

consumable materials, (3) implementing procedures, (4) construction drawings, (5) control of related records, and (6) the training and qualification of staff involved with firewater installation activities.

1.7.2 Observations and Assessments

The firewater service mains and hydrants were to be installed in accordance with the requirements of NFPA 24. The firewater systems were not subject to the requirements of the Contractor's Quality Assurance Manual because they were not classified as ITS. The Contractor planned for installation of the firewater service mains and hydrants to be performed by the Contractor using Contractor staff and procedures. Specifically, the following procedures governing the installation of the firewater service mains and hydrants were reviewed:

- 24590-WTP-GPP-CON-3201, "Construction Surveying," Rev. 0, dated September 28, 2001
- 24590-WTP-GPP-CON-3202, "Excavation and Backfill," Rev. 0, dated October 12, 2001
- 24590-WTP-GPP-CON-3502, "Underground Piping Installation," Rev. 0, dated October 19, 2001
- 24590-WTP-GPP-CON-3504, "Pressure Testing," Rev. 0, dated October 12, 2001
- 24590-WTP-GPP-CON-3105, "Construction Work Package-Special Instructions," Rev. 0, dated October 30, 2001
- 24590-WTP-GPP-CON-1301A, "Construction Training," Rev. 0, dated November 12, 2001
- 24590-WTP-GPP-CON-6201, "Equipment Preservation and Maintenance," Rev. 0, dated October 15, 2001
- 24590-WTP-GPP-GCB-00100, "Field Materials Management," Rev. 0, dated August 17, 2001.

The inspectors concluded the above procedures provided adequate controls in their areas of applicability to assure the firewater service mains and hydrants would be installed in accordance with specified requirements. The inspectors also found that the above procedures provided adequate controls regarding the generation of appropriate records and forwarding of records to the Project Document Control facility.

The inspectors interviewed the Contractor's Lead Piping Field Engineer and field engineer responsible for the installation of the firewater system. Based on this interview, the inspectors found the Contractor had procured the materials needed to install firewater service mains and hydrants, and had the material in transient storage. The material had not been receipt inspected and accepted. The Contractor intended to implement the requirements of the Field Materials

Management procedure, regarding receipt inspection, prior to installation in the field. The inspectors found this acceptable. Implementation of the receipt inspection process will be evaluated in future OSR inspections. Subsequent to the interview, the inspectors were provided copies of several Purchase Requisitions as evidence that appropriate firewater hardware had been procured. The inspectors reviewed the purchase requisitions and found no deficiencies. The inspectors were also provided with copies of work packages that would be used install the firewater system. These work packages were reviewed by the inspectors and no deficiencies were found.

The inspectors found the Contractor's training and qualification program to be adequate to assure that trained and qualified staff would accomplish firewater system construction work. However, Contractor staff had not yet been hired or trained to accomplish the planned work.

The inspectors examined drawing 24590-BOF-M6-FSW-00001, "Piping and Instrument Diagram Fire Protection System Fire Water Main Loop System FSW," Rev. 1, dated September 21, 2001, and several area piping layout drawings to verify that certain requirements of DOE-STD-1066-99, "DOE Standard Fire Protection Design Criteria," July 1999 Edition, had been implemented in the design. Specifically, the inspector verified that DOE-STD-1066, Section 6.2.4, requirements regarding sprinkler system lead-ins, risers, and alarm valves had been properly implemented in the design drawings.

DOE-STD-1066, Section 6.2.3, requires that control valves be installed at maximum intervals of 1200 feet on main loops, feeders, and all primary branches connected to these lines. The inspectors, through discussions with the Supervising Fire Protection Engineer, were informed that the engineering department had not verified the implementation of this requirement. However, the engineer expressed confidence that the requirement had been implemented in practice because of their conformance with DOE-STD-1066 requirements limiting the total number of supply branches between control valves to five (DOE-STD-1066, Section 6.2.2). Engineering considered the five-branch limitation to be the most restrictive and that conformance with the 1200-foot criteria would, therefore, be assured. The inspectors verified that three, out of about thirty total, runs of piping between control valves were less than 1200 feet, although one was approximately 1106 feet. The inspectors found no evidence that the 1200-foot criteria had been exceeded. Accordingly, the inspector's examinations demonstrated that the selected DOE-STD-1066 criteria had been implemented. The construction drawings, necessary to install the firewater service mains and hydrants, had been issued for construction.

The inspectors examined the Contractor's program and procedures for inspection, testing, and maintenance of firewater system service piping and hydrants. The inspectors found that the Pressure Testing procedure provided an adequate program and process to assure that hydrostatic testing of firewater piping systems would be accomplished in accordance with NFPA 24 requirements. The Contractor's programs and procedures for Construction Work Package-Special Instructions and Underground Piping Installation provided an adequate framework to assure that system flushing would be accomplished as required by NFPA 24.

The inspectors examined the Contractor's program for assuring accomplishment of firewater service main and hydrant inspection, testing, and maintenance, after construction completion and acceptance for operation, in accordance with the requirements of NFPA 25, "Standard for the

Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 1998 Edition. The inspectors concluded that the procedure for Equipment Preservation and Maintenance provided an adequate mechanism to assure conformance with NFPA 25 requirements.

1.7.3 Conclusions

The inspectors concluded that the Contractor had established adequate programs and procedures to assure that firewater service mains and hydrants would be installed, inspected, tested, and maintained in accordance with NFPA requirements.

2.0 EXIT MEETING SUMMARY

The inspectors presented preliminary inspection results to members of Contractor management at an exit meeting on November 15, 2001. The Contractor acknowledged the observations and conclusions.

3.0 REPORT BACKGROUND INFORMATION

3.1 Partial List of Persons Contacted

R. Naventi, Project Manager
F. Beranek, Manager ES&H
D. Klein, Manager, Radiological, Nuclear, and Process Safety
E. Hughes, Deputy Engineering Manager
E. Smith, Safety Program Engineer
M. Ensminger, Quality Control Supervisor
G. Warner, Audit Supervisor
R. Amos, Project Field Engineering Manager
W. Clements, Site Manager
G. Shell, QA Manager
C. McKnight, Fire Protection Supervisor
G. Kump, Piping Field Engineer
S. Horn, CS&A BOF Supervisor
J. McDonald, Lead Civil Field Engineer
S. Sallee, Senior Quality Evaluation Engineer
D. Ward, Lead Piping Field Engineer
S. Moujaes, Senior Piping Designer
W. Clinger, Procurement

3.2 List of Inspection Procedures Used

Inspection Technical Procedure I-104, "Design Process Assessment"

Inspection Technical Procedure I-106, "Personnel Training and Qualification Assessment"

Inspection Technical Procedure I-112, "Geotechnical/Foundations Inspection"

Inspection Technical Procedure I-135, "Readiness for Construction Inspection"

Inspection Technical Procedure I-130, "Procurement Program Inspection"

Inspection Technical Procedure I-131, "Document Control and Records Management Program Inspection"

Inspection Technical Procedure I-132, "Identification and Control of Items and Processes Program Inspection"

Inspection Technical Procedure I-133, "Quality Control Program Inspection"

Inspection Technical Procedure I-137, "Inspection of Fire Protection System Construction"

3.3 List of Items Opened, Closed, and Discussed

Opened

IR-01-008-01-IFI	Follow-up Item	Verify Contractor QA organization performed a review of soil testing subcontractor's QA Manual against ASTM D 3740. (Section 1.6.2)
IR-01-008-02-IFI	Follow-up Item	Review soil testing subcontractor testing procedures required by BNI's soil testing specification during Geotechnical Inspections of field activities. (Section 1.6.2)

Closed

None

Discussed

None

3.4 List of Acronyms

AASHTO	Association of State Highway and Transportation Officials
AB	authorization basis
AJH	Authority having Jurisdiction
ASL	Approved Suppliers List

ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BOF	Balance of Facilities
BNI	Bechtel National, Inc.
CP	Construction Procedure
DOE	U.S. Department of Energy
HLW	High Level Waste
IFI	Inspection Follow-up Item
IR	Inspection Report
ISMP	Integrated Safety Management Plan
ITS	important-to-safety
LAW	Low Activity Waste
LCAA	Limited Construction Authorization Agreement
LCAR	Limited Construction Authorization Request
M&TE	Measuring and Test Equipment
NFPA	National Fire Protection Association
NQA	Nuclear Quality Assurance
ORP	Office of River Protection
OSR	Office of Safety Regulation
QA	Quality Assurance
QAM	Quality Assurance Manual
QC	Quality Control
RPP-WTP	River Protection Project – Waste Treatment Plant
SC	Safety Criterion
SCAR	Surveillance Corrective Action Record
SER	Safety Evaluation Report
SRD	Safety Requirements Document
TBD	To Be Determined